

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number  
**WO 2005/060147 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 9/06**

(21) International Application Number:  
PCT/IB2004/052607

(22) International Filing Date:  
30 November 2004 (30.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03104643.6 11 December 2003 (11.12.2003) EP

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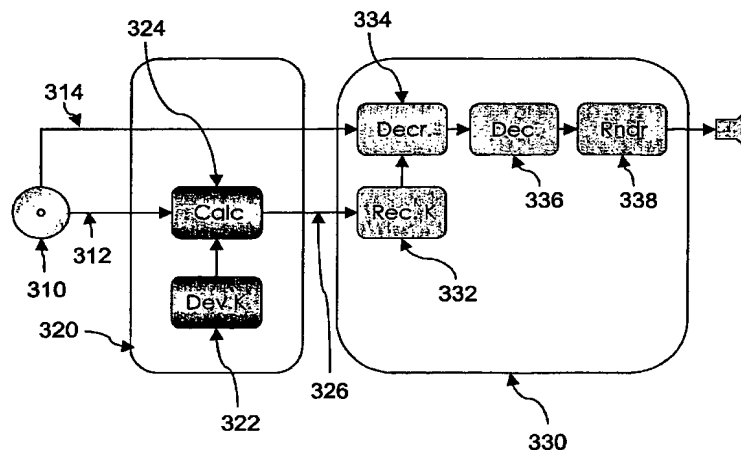
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,

[Continued on next page]

(54) Title: **BLOCK CIPHERING SYSTEM, USING PERMUTATIONS TO HIDE THE CORE CIPHERING FUNCTION OF EACH ENCRYPTION ROUND**



(57) Abstract: In a system (600), a server (610) provides a digital signal processing function  $f$  to an executing device (620) in an obfuscated form. The function includes a function cascade of signal processing functions  $f_i$ ,  $1 \leq i \leq N$  to formula (I). The server includes a processor (612) for selecting a set of  $2N$  invertible permutations  $p_i$ ,  $1 \leq i \leq 2N$ ; calculating a set of  $N$  functions  $g_i$ , where  $g_i$  is functionally equivalent to formula (II) for  $1 \leq i \leq N$ ; and calculating a set of  $N-1$  functions  $h_i$ , where  $h_i$  is functionally equivalent to formula (III) for  $2 \leq i \leq N$ . The server includes means (614) for equipping the executing device with an execution device function cascade that includes formula (IV), where  $y_1, \dots, y_N$  are function parameters to formula (V), and means (616) for providing the functions  $g_1, \dots, g_N$  to the executing device. The executing device includes means (626) for obtaining the functions  $g_1, \dots, g_N$  and a processor (622) for loading the execution device function cascade and applying the loaded execution device function cascade to the functions  $g_1, \dots, g_N$  (e.g.,  $ED(g_1, \dots, g_N)$ ).



SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA,*

*SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

**Published:**

- *with international search report*

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